

ABSTRACT OF THE DISCLOSURE

A method for forming a patterned photoresist layer aligned with a predetermined layer is described. A photoresist layer is formed on a substrate and then exposed. The overlay offset between the exposed portions of the photoresist layer and the predetermined layer is measured for determining whether the exposed portions of the photoresist layer are aligned with the predetermined layer. A development step is performed when the exposed portions of the photoresist layer are found to align with the predetermined layer. An apparatus for forming a patterned photoresist layer is also described, which utilizes the aforementioned method and has a mechanism capable of feeding back the overlay offset in real time for reducing the cycle time and the rework time in the lithography process.